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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,358	04/12/2006	Wouter Harry Rensen	PHNL031205US	8146

38107 7590 03/31/2008

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
595 MINER ROAD
CLEVELAND, OH 44143

EXAMINER	
GIGLIO, BRYAN J	

ART UNIT	PAPER NUMBER
2877	

MAIL DATE	DELIVERY MODE
03/31/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/595,358	RENSEN ET AL.	
	Examiner	Art Unit	
	BRYAN GIGLIO	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 January 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-14 and 16-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-14 and 16-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *1/3/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Art Unit: 2877

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement (IDS) submitted on January 3, 2008 was considered by the examiner.

Response to Arguments

Applicant's arguments, see *Remarks*, page 10-11, filed 3 January, 2008, with respect to claims 1-16 under 35 U.S.C. 102 have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Koyama, et al. (U.S. Patent No. 4853917), newly cited, and Anderson, et al. (U.S. PGPub. No. 2002/0161357), newly cited.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 depends from a cancelled claim, and as such the scope of the claim cannot be determined. Prior art will therefore not be applied (see *In re Steele*, 305 F.2d 859,134 USPQ 292 (CCPA 1962)).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects

for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 2, 4, 5, 9, 10, 12, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Koyama, et al. (U.S. Patent No. 4853917), newly cited.

In regard to claim 2, the Koyama reference teaches a method of determining a property of a substance (see c.1, l.10-14, “predetermined track on a recording medium and effecting recording or reproduction of information”), the method comprising the steps of: performing an optical detection step for determining a position of a volume of interest (see fig.7a, element 47) by means of an objective (see fig.7a; and see c.5, l.25-32), moving the objective such that a focal point of the objective is positioned in the volume of interest (see fig.7a, element 48, "actuator"; and see c.5, l.23-25), performing an optical spectroscopic step for determining the property of the substance in the volume of interest by means of a measurement beam (see fig.7a, and see c.2, l.6-12, "the spot on the detector lies on the axis X—X'", and see “G”, which is the location of the detector for reading data signals, at the particular spectroscopic wavelength of the laser), wherein a coverage of the measurement beam is greater than the objective opening (see fig.7a, and see c.5, l.17-21, “beam…enters the objective **46** with a diameter B greater than the effective diameter A of the objective **46**”), and wherein the objective is moved in a direction perpendicular to the measurement beam while the objective opening remains within the coverage of the measurement beam (see fig.7a, “T”).

In regard to claim 4, the Koyama reference teaches the method wherein the optical detection step is performed by means of an imaging method (see figs.7a, 11, or 14, imaging clearly occurring; or see c.1, l.63, “spot imaged by the objective”).

In regard to claim 5, the Koyama reference teaches the method wherein Raman spectroscopy, fluorescence spectroscopy, elastic scattering spectroscopy (see c.1, l.24-25, "a diffraction occurs and the diffracted light is scattered in a direction perpendicular to the tracks"; where this diffraction is used for tracking and where it is inherently elastic (same wavelength) scattering; and see nih.gov definition of spectroscopy: "spectroscopy: The study of the distribution of a characteristic of a system or phenomenon, especially the distribution of energy emitted by a system or the distribution of atomic or subatomic particles in a system.", retrieved from www.google.com, using

search string “define:spectroscopy”), infrared spectroscopy, or photo-acoustic spectroscopy is used for performing the optical spectroscopic step.

In regard to claim 9, the Koyama reference teaches a spectroscopic (see above definition) system for determining a property of a substance (see c.1, l.10-14, “predetermined track on a recording medium and effecting recording or reproduction of information”) comprising: an imaging system (see figs.7a, 11, or 14, imaging clearly occurring; or see c.1, l.63, “spot imaged by the objective”) which monitors a position of a volume of interest (see fig.7a, element 48, "actuator"; and see c.5, l.23-25), an objective having a focal point (see fig.7a, element 47) for performing an optical detection (see fig.7a; and see c.5, l.25-32), an actuator which moves the objective and the focal point (see fig.7a, element 48, "actuator"; and see c.5, l.23-25), a controller responsive to the imaging system to control the actuator to move the objective such that the focal point is maintained positioned in the volume of interest (see figs.15-20, element 81, “controller”), optical spectroscopic means for determining the property of the substance in the volume of interest (see fig.7a, and see c.2, l.6-12, "the spot on the detector lies on the axis X—X'", and see “G”, which is the location of the detector for reading data signals, at the particular spectroscopic wavelength of the laser), the optical spectroscopic means being adapted to provide a measurement beam (see fig.4a, element 41, “semiconductor laser”.

In regard to claim 10, the Koyama reference teaches the spectroscopic system wherein the actuator includes mechanical, electro mechanical and/or piezo-electric components (see c.6, “actuator **48** is a vibratory system”).

In regard to claim 12, the Koyama reference teaches the spectroscopic system wherein a coverage of the measurement beam is greater than an opening of the objective opening (see fig.7a, and see c.5, l.17-21, “beam…enters the objective **46** with a diameter B greater than the effective diameter A of the objective **46**”).

In regard to claim 13, the Koyama reference teaches the spectroscopic system further comprising a first reflective optical element to direct the measurement beam to the objective opening (see fig. 7a, element 43 directs

light to the objective on the illumination path), the measurement beam having a direction perpendicular to the optical axis of the objective (see fig.7a, beam is made perpendicular at the return interface with element 43).

In regard to claim 14, the Koyama reference teaches the spectroscopic system further comprising a second reflective optical element to direct the measurement beam to the first reflective optical element, the second reflective optical element being mounted rotatably (see fig.7a, 8, 11, and 14, element 47; and see c.7, l.15-33, “reflected light from a medium **47**”; which is inherently a disk being rotated by the computer; see fig.8).

Claims 2-7, 9-10, 12- 14, 16, 18, and 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Anderson, et al. (U.S. PGPub. No. 2002/0161357), newly cited.

In regard to claim 2, the Anderson reference teaches a method of determining a property of a substance (see [0052], “feedback could also be used to track a blood vessel”), the method comprising the steps of: performing an optical detection step for determining a position of a volume of interest (see [0051]-[0052], “targeted components in volume V can be located“) by means of an objective (see figs.1b, 2, and 2A-C, and see [0066], "microlens system"), moving the objective such that a focal point of the objective is positioned in the volume of interest (see [0051]-[0052], “targeted components in volume V can be located“; and see [0035], “physically moved on the skin surface over volume V, either manually or by a suitable two-dimensional or three-dimensional (including depth) positioning mechanism, to direct radiation to desired successive portions”; and see [0053]), performing an optical spectroscopic step for determining the property of the substance in the volume of interest by means of a measurement beam (see [0053], “different colors”, “detect the location of the blood vessel and the depth of the blood vessel”; and see [0054]), wherein a coverage of the measurement beam is greater than the objective opening (see figs.2, 2A-2C, 8, and 8A-8C where each microlens is its own small objective diameter and the illumination beam covers the entire microlens array), and wherein the objective is moved in a direction perpendicular to the measurement beam while the objective opening remains within the coverage of the measurement beam (see [0051]-[0052], “targeted components in volume V can be located“; and see [0035], “physically moved on the skin surface over volume V, either manually or by a suitable two-dimensional or three-dimensional (including depth) positioning

mechanism, to direct radiation to desired successive portions"; and see [0053], inherent in movement of whole measurement head, at least).

In regard to claim 3, the Anderson reference teaches the method wherein the substance is a fluid flowing through a biological tubular structure (see [0051]-[0054], "blood or melanin"), and further comprising the steps of: tracking a movement of the biological tubular structure by repetitively performing the optical detection step (see [0052], "feedback could also be used to track a blood vessel"), moving the objective such that the focal point remains in the volume of interest (see [0052], "focused beams 222 can be automatically positioned in response to outputs from detector").

In regard to claim 4, the Anderson reference teaches the method wherein the optical detection step is performed by means of an imaging method (see [0051]-[0052], "detector **216** is a CCD imaging device…targeted components in volume V can be located").

In regard to claim 5, the Anderson reference teaches the method wherein Raman spectroscopy, fluorescence spectroscopy, elastic scattering spectroscopy (see [0006], "scattering"; and see nih.gov definition of spectroscopy: "spectroscopy: The study of the distribution of a characteristic of a system or phenomenon, especially the distribution of energy emitted by a system or the distribution of atomic or subatomic particles in a system.", retrieved from www.google.com, using search string "define:spectroscopy"), infrared spectroscopy (see [0015], infrared wavelengths), or photo-acoustic spectroscopy is used for performing the optical spectroscopic step.

In regard to claim 6, the Anderson reference teaches the method wherein the substance is blood and the volume of interest is located in a blood vessel (see [0051]-[0054], "blood vessel", "blood or melanin").

In regard to claim 7, the Anderson reference teaches a computer program product comprising program means for performing the steps of claim 2 (see [0037], "suitably programmed microprocessor").

In regard to claim 9, the Anderson reference teaches a spectroscopic (see above definition) system for determining a property of a substance (see [0052], "feedback could also be used to track a blood vessel") comprising: an imaging system which monitors a position of a volume of interest method (see [0051]-[0052], "detector

216 is a CCD imaging device…targeted components in volume V can be located"), an objective having a focal point (see fig.7a, element 47) for performing an optical detection (see figs.1b, 2, and 2A-C, and see [0066], "microlens system"), an actuator which moves the objective and the focal point (see [0051]-[0052], "targeted components in volume V can be located"; and see [0035], "physically moved on the skin surface over volume V, either manually or by a suitable two-dimensional or three-dimensional (including depth) positioning mechanism, to direct radiation to desired successive portions"; and see [0053]), a controller responsive to the imaging system to control the actuator to move the objective such that the focal point is maintained positioned in the volume of interest (see [0037], "suitably programmed microprocessor"; and see [0052], "feedback could also be used to track a blood vessel"), optical spectroscopic means for determining the property of the substance in the volume of interest (see [0053], "different colors", "detect the location of the blood vessel and the depth of the blood vessel"; and see [0054]), the optical spectroscopic means being adapted to provide a measurement beam (see [0053]).

In regard to claim 10, the Anderson reference teaches the spectroscopic system wherein the actuator includes mechanical, electro mechanical and/or piezo-electric components (see [0051]-[0052], "targeted components in volume V can be located"; and see [0035], "physically moved on the skin surface over volume V, either manually or by a suitable two-dimensional or three-dimensional (including depth) positioning mechanism, to direct radiation to desired successive portions").

In regard to claim 11, the Anderson reference teaches the spectroscopic system further comprising a base station and a measurement head (see fig.22A, including a cable connecting the light source, and see and [0034—[0035], "deliver head"), the base station and the measurement head being coupled by at least one optical fibre (see fig.22A and 22B, including a cable connecting the light source, and see [0079], "optical fiber") for transmitting the measurement beam from the base station to the measurement head and for transmitting return radiation from the measurement head to the base station (inherent, device wouldn't work otherwise), the measurement head comprising optical means for directing the measurement beam to the objective opening and the means for moving the objective (see [0035], "physically moved on the skin surface over volume V, either manually or by a suitable two-

dimensional or three-dimensional (including depth) positioning mechanism, to direct radiation to desired successive portions").

In regard to claim 12, the Anderson reference teaches the spectroscopic system wherein a coverage of the measurement beam is greater than an opening of the objective opening (see figs.2, 2A-2C, 8, and 8A-8C where each microlens is its own small objective diameter and the illumination beam covers the entire microlens array).

In regard to claim 13, the Anderson reference teaches the spectroscopic system further comprising a first reflective optical element to direct the measurement beam to the objective opening, the measurement beam having a direction perpendicular to the optical axis of the objective (see figs.14-16).

In regard to claim 14, the Anderson reference teaches the spectroscopic system further comprising a second reflective optical element to direct the measurement beam to the first reflective optical element, the second reflective optical element being mounted rotatably (see fig.16 and 16A).

In regard to claim 16, the Anderson reference teaches a method of providing an in vivo analysis of blood (see [0051]-[0054], "blood vessel", "blood or melanin") comprising using an imaging system to locate an objective (see figs.1b, 2, and 2A-C, and see [0066], "microlens system") relative to a blood vessel (see [0051]-[0052], "detector **216** is a CCD imaging device…targeted components in volume V can be located"); moving the objective such that a focal point of the objective is aligned with the blood vessel (see [0035], "physically moved on the skin surface over volume V, either manually or by a suitable two-dimensional or three-dimensional (including depth) positioning mechanism, to direct radiation to desired successive portions"); forming a feedback loop such that the position of the objective is compared to the position of the blood vessel after movement of the objective and the objective is moved again until the focal point aligns with the blood vessel (see [0037], "suitably programmed microprocessor"; and see [0052], "feedback could also be used to track a blood vessel"); using a spectroscopic system to direct a laser light beam through the objective and onto the blood vessel (see [0034], and [0051]-[0054]); and using return light to perform a spectroscopic analysis of the blood in the blood vessel (see [0015], and [0054]).

In regard to claim 18, the Anderson reference teaches a computer program product carrying a computer program for controlling a spectroscopic system to perform the method of claim 16 (see [0037], "suitably programmed microprocessor").

In regard to claim 19, the Anderson reference teaches an apparatus for providing in vivo analysis of blood (see [0051]-[0054], "blood vessel", "blood or melanin"), the apparatus comprising: an objective having a focal point (see figs.1b, 2, and 2A-C, and see [0066], "microlens system"); an imaging system that determines a current position of the objective relative to a target blood vessel (see [0051]-[0052], "detector **216** is a CCD imaging device...targeted components in volume V can be located"); a feedback loop which compares the current position of the objective focal point relative to the target blood vessel and moves the objective until the focal point coincides with the target blood vessel (see [0037], "suitably programmed microprocessor"; and see [0052], "feedback could also be used to track a blood vessel"); a laser that directs laser light through the objective to the focal point (see [0034], and [0051]-[0054]); and a spectrometer which analyzes light retained through the objective to determine one or more properties of blood in the target blood vessel (see [0015], and [0054], "filtered to provide different colors").

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that

was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Koyama et al. (U.S. Patent No. 4853917), newly cited above, in view of well known practices in the art.

In regard to claim 7, the Koyama reference teaches all of the elements of claim 2 as cited above, from which claim 7 depends. It is silent to a computer program product comprising program means for performing the steps of claim 2, per se. The Koyama reference teachings apply to ubiquitous optical DRAW or rewritable disk devices, which are well known peripherals that are inoperable without a computer to control and interface with them, and such a computer is inoperable without subsequent software to perform controlling. Furthermore, Koyama teaches some aspects of such a controller (see fig.15-20, element 81, "controller"). Official notice is hereby taken that a computer program product comprising program means for performing the steps of claim 2 would have been required in order to enable the operations of the system as taught by Koyama.

Therefore, it would have been obvious to a person having ordinary skill in the art that a computer program product is required for operating the system as taught by Koyama in order to control it in a ubiquitous computer peripheral controlling manner.

In regard to claim 8, the Koyama reference, in combination above with software control, teaches the computer program product, the program means being adapted to control a second reflective optical element (see fig.7a, 8, 11, and 14, element 47; and see c.7, l.15-33, "reflected light from a medium **47**"; which is inherently a disk being rotated by the computer; see fig.8) in order to direct the measurement beam from the second reflective optical element onto a first reflective optical element (see fig.7a, element 43), such that the first reflective optical element directs the measurement beam to the objective opening (element 43 directs light to the objective on the illumination path), the measurement beam having a direction perpendicular to the optical axis of the objective when it impinges upon the first reflective optical element (see fig.7a, beam is made perpendicular at the return interface with element 43).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following citations of U.S. Patents, Pre-grant Publications (PGPub), or non-patent literatures (NPL) are included in order to exemplify the state of the art to which the application is related.

Anderson, et al. (U.S. Patent No. 6997923) is the patent of the above cited PGPub.

Anderson, et al. (U.S. Patent No. 7217266) comprises a blood vessel measuring system.

Knopp, et al. (U.S. Patent No. 6913603) and Okumura, et al. (U.S. Patent No. 6193372) comprise blood vessel tracking for eye surgery.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYAN GIGLIO whose telephone number is (571)270-1028. The examiner can normally be reached on M-F, 7:30AM-5:00PM EST, Alt. Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory Toatley can be reached on (571)272-2059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kara E Geisel/
Patent Examiner,
Art Unit 2877

/B. G./
Examiner, Art Unit 2877